

VTG 300 & VTG 300R

HANDHELD BATTERY POWERED VIDEO
AND AUDIO TEST GENERATORS

- High resolution video output signals:
Computer, plasma, HDTV
- NTSC or PAL video output signals:
Component, S-video, composite
- 34 scan rates
- Broadcast quality video encoder
- 13 video test patterns
- Six audio test signals
- Protective rubber boot
- Battery operated or DC powered
- Integrated battery charger
(VTG 300R only)



The Extron VTG 300 and VTG 300R are intuitive, broadcast quality video and audio test generators that feature 34 video scan rates, 13 video test patterns, and six audio test signals for setting up and fine tuning A/V signal reproduction in a variety of applications. Housed in a compact, rugged enclosure with a protective rubber boot, both models are ideal for portable field use and integrated systems.



Extron® Electronics

www.extron.com

DESCRIPTION

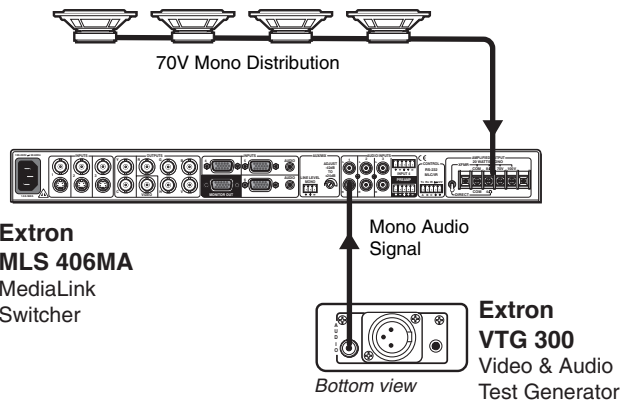
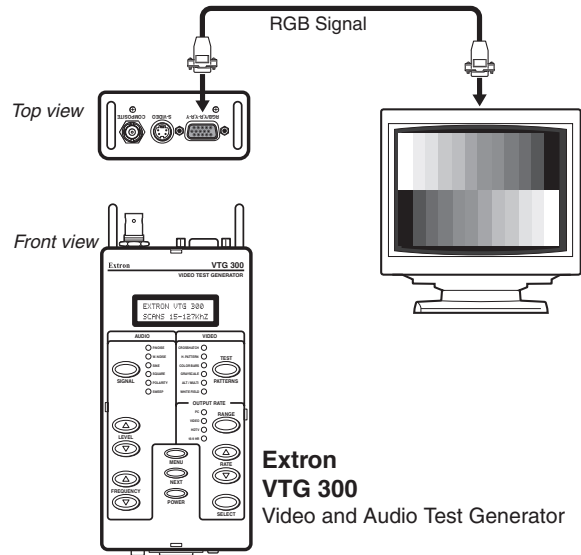
The Extron VTG 300 and VTG 300R are handheld, battery-operated video and audio test generators featuring high resolution computer-video, plasma, HDTV, and 16:9 rates, as well as standard definition NTSC or PAL video rates for RGB, component video, S-video, and composite video. The VTG 300R features a rechargeable battery with an internal charger, while the VTG 300 operates on four AA batteries. Both models can be powered when the included external power supply is connected. When fully charged, the VTG 300R can operate continuously for up to approximately 5 hours. Each product is lightweight and compact for portable field use or bench testing. As versatile, broadcast quality reference tools, these test generators can be used for projector set-up, performance evaluation, alignment, convergence, calibration, synchronization, troubleshooting, and accurate video and audio signal quality reproduction in professional A/V applications.

The VTG 300 and VTG 300R feature streamlined user interfaces with easy-to-read, backlit LCD displays and rubber pushbuttons for direct and simple access to video and audio functions. The 13 video test patterns can be used with any of the 34 video scan rates. An integrated audio tone generator includes six audio test signals on a balanced XLR connector, as well as unbalanced on a female RCA connector and 3.5 mm dual-channel mono mini jack. When the test generator is turned off, the most recent settings are stored and automatically recalled when the unit is turned on again. The VTG 300 and VTG 300R are housed in compact, rugged enclosures. Each comes with a protective rubber boot to guard against severe environments and prolong the lifespan of the test generator.

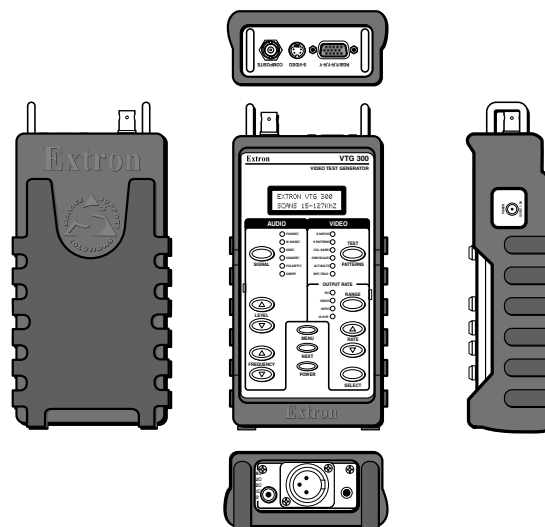
FEATURES

- **34 scan rates** – Provides scan rates to support high resolution computer-video, HDTV, 16:9, plasma, RGB, as well as standard definition component video, S-video, and composite video.
- **Broadcast quality video encoder** – Ensures compliance with SMPTE and NTSC/PAL standards for accurate video performance.
- **13 video test patterns** – Included are crosshatch (32x24, 32x18), H pattern, SMPTE color bars, EBU color bars, 8-color split bars, 32-level split grayscale, ramp, alternating pixels, multiburst, 20% window, 80% window, and flat field — all the essential patterns for accurately testing, and calibrating a display.
- **Video output connectors** – A 15-pin HD female connector is provided for RGB and component video output signals, while BNC female and 4-pin mini DIN female connectors are provided for composite video and S-video signals, respectively.
- **Six audio test signals** – Test signals for the VTG 300 and VTG 300R include sine waves, square waves, pink noise, white noise, polarity, and frequency sweep. Basic audio testing is helpful for loudspeaker calibration, frequency settings, distortion, and polarity verification in audio cabling.
- **Portability** – Small, rugged, handheld enclosures, along with the included protective rubber boots, make the VTG 300 and VTG 300R excellent tools for technicians in the field.
- **Power options** – The VTG 300R can be powered using the integrated rechargeable battery, while the VTG 300 operates on four AA batteries (not included). Both models can also be powered using the included external international power supply (part # 70-055-03).
- **Integrated charger (VTG 300R only)** – When the power supply is connected, the battery can be recharged while the VTG 300R is in operation. Fully charged in 8 hours, the VTG 300R can provide up to 5 hours of continuous operation.

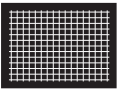
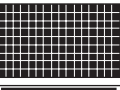






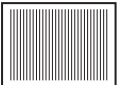




APPLICATION DIAGRAMS



PANEL DRAWINGS



TEST PATTERNS, VIDEO OUTPUT RATES, AND AUDIO SIGNALS

VTG 300 TEST PATTERNS	
32 x 24 Crosshatch This crosshatch pattern can be used to set projector focus and geometry. For CRT projectors, this pattern is for examining and adjusting both static and dynamic convergence, so that the red, green, and blue video signals are aligned throughout the image.	
32 x 18 Crosshatch This crosshatch pattern is for use with 16:9 displays.	
H Pattern This pattern is used to check or evaluate video clamping stability, focus for projectors, and video pulse response, as well as to simulate text. The user can toggle between white-on-black and black-on-white.	
SMPTE Color Bars (with PLUGE pattern) For NTSC video equipment, the SMPTE color bars are used to set up tint and color, while the PLUGE video pattern is for adjusting brightness and contrast.	
EBU Color Bars The EBU color bars are primarily used to set up color for PAL video equipment.	
Color Bars (8-color split) This pattern is used for testing all of the video color channels and setting video drive levels. It is also used to check low frequency crosstalk between the red, green, and blue color channels.	
32-level Split Grayscale With two opposing rows of 32 stepped bars of gray between the lowest and highest levels, this pattern is used for setting and assessing grayscale tracking, and evaluating contrast linearity on displays.	
Ramp This is used to evaluate the performance of a display or video processor on the basis of its pixel bit depth capability. The pattern should appear to be smooth, with no contouring or stepping.	
Alternating Pixels This one pixel "on," one pixel "off" pattern is used for assessing the performance of high resolution monitors and projectors, EMI testing for worst case radiation, and pixel clocking and pixel phasing adjustments on a digital display.	
Multiburst This pattern, consisting of sine wave bursts of increasing frequency, tests bandwidth performance for NTSC and PAL video.	
Flat Field This pattern is used to evaluate white field uniformity.	
80% Window A window at 80% (80 IRE) video level, surrounded by black, is used in fine tuning the color balance (or grayscale) of a display with the aid of a color analyzer. The gain (or drive) setting is fine tuned for each of the red, green, and/or blue color adjustments.	
20% Window A window at 20% (20 IRE) video level, surrounded by black, is used in fine tuning the color balance (or grayscale) of a display with the aid of a color analyzer. The bias (or offset) setting is fine tuned for each of the red, green, and/or blue color adjustments.	

VTG 300 COMPUTER OUTPUT RATES			
Rate Name	Resolution	H (kHz)	V (Hz)
Computer Scan Rates			
VGA1	640 x 480	31.5	60
VGA2	640 x 480	37.5	75
SVGA1	800 x 600	37.9	60
SVGA2	800 x 600	46.9	75
XGA1	1024 x 768	48.4	60
XGA2	1024 x 768	56.4	70
XGA3	1024 x 768	60.0	75
SXGA1	1280 x 1024	64.0	60
SXGA2	1280 x 1024	91.1	85
SXGA+	1400 x 1050	63.9	60
UXGA1	1600 x 1200	75.0	60
UXGA2	1600 x 1200	87.5	70
UXGA3	1600 x 1200	106.3	85
LCoS1	1360 x 1024	80.0	75
LCoS2	1365 x 1024	65.2	60
Video Rates - NTSC or PAL			
NTSC	720 x 480	15.745	60
NTSC (0 IRE)	720 x 480	15.745	60
PAL-I	720 x 576	15.6	50
PAL-B,G,H	720 x 576	15.6	50
PAL-N	720 x 576	15.6	50
HDTV Scan Rates			
480p	720 x 480	31.5	60
576p	720 x 576	31.5	50
720p	1280 x 720	45.0	60
1080i	1920 x 1080	33.75	60
1080i	1920 x 1080	28.12	50
1080p	1920 x 1080	67.5	60
1080p	1920 x 1080	56.2	50
1080p	1920 x 1080	27.0	48
16:9 High Resolution Scan Rates			
16:9 HR	848 x 480	31.0	60
16:9 HR	852 x 480	31.8	60
16:9 HR	1280 x 768	45.1	56
16:9 HR	1280 x 768	48.0	60
16:9 HR	1360 x 765	47.7	60
16:9 HR	1366 x 768	47.8	60

VTG 300 AUDIO SIGNAL FORMATS	
Pink Noise	Random noise that has constant energy per octave. Used in loudspeaker testing and calibration.
White Noise	Random noise that has an equal energy distribution across all frequencies between 20 Hz and 20 kHz.
Sine Wave	Used in detecting distortion. The frequency can be set from 20 Hz to 20 kHz (in 1/3 octave steps).
Square Wave	Square wave signal with 50% duty cycle and no DC offset. The frequency can be set from 20 Hz to 5 kHz.
Swept Sine Wave	Varies the frequency of a sine wave signal continuously from 20 Hz to 20 kHz. Used to detect driver defects and mechanical sources of distortion.
Polarity test	Proprietary waveform used in verifying the polarity of audio cabling.

VTG 300 AUDIO LEVELS			
Signal Format	Range (dBu)	Range (dBV)	Range (mV)
Pink Noise	-56 dBu to -8 dBu	-58 dBV to -10 dBV	1.25 mV to 316 mV
Polarity Test	-72 dBu to -18 dBu	-74 dBV to -20 dBV	0.20 mV to 100 mV
All other signal types	-72 dBu to +6 dBu	-74 dBV to +4 dBV	0.20 mV to 1.6 V

VTG 300 AUDIO FREQUENCIES (SINE WAVES, SQUARE WAVES, POLARITY TEST)			
20 Hz	25 Hz	31.5 Hz	40 Hz
50 Hz	63 Hz	80 Hz	100 Hz
125 Hz	160 Hz	200 Hz	250 Hz
315 Hz	400 Hz	500 Hz	630 Hz
800 Hz	1 kHz	1.2 kHz	1.6 kHz
2 kHz	2.5 kHz	3.15 kHz	4 kHz
5 kHz	6.3 kHz	8 kHz	10 kHz
12.5 kHz	16 kHz	20 kHz	

VIDEO SIGNAL CHARACTERISTICS

Dot clock	108 MHz (max.)
Pixel clock accuracy	100 ppm
Horizontal frequency	15 kHz to 127 kHz
Vertical frequency	30 Hz to 85 Hz
Rise/fall time	
Composite and S-video	140 ns
All other signal types	<4 ns

VIDEO OUTPUT

Number/signal type	1 RGBHV, RGBS, RGsB, RsGsBs, component video, S-video, composite video
Connectors	(1) 15-pin HD female (RGB/component) (1) 4-pin mini DIN female (S-video) 1 BNC female (composite video)
Nominal level	1 V p-p for Y of component video and S-video, and for composite video, and also R-Y and B-Y of component video (tri-level sync) 0.7 V p-p for RGB and for R-Y and B-Y of component video (bi-level sync) 0.286 V p-p (burst) for C of S-video
Minimum/maximum levels	0.0 V to 1.0 V p-p
Impedance	75 ohms
Resolutions	Computer (VGA-UXGA), video (NTSC, PAL), HDTV, and 16:9 high resolutions
Return loss	-30 dB @ 5 MHz
DC offset	±5 mV for RGB and component video, ±30 mV for S-video and composite video

SYNC

Output type	RGBHV, RGBS, RGsB, RsGsBs, (for RGB signals) Tri-level on Y, R-Y, B-Y channels (component video 720p, 1080i, 1080p) Bi-level on Y channel (for all other component video rates)
Standards	NTSC 3.58, NTSC 4.43, PAL, SMPTE 170M, SMPTE 274M, SMPTE 293M, SMPTE 295M, SMPTE 296M
Output level	0.3 V p-p for component video (bi-level sync) 0.6 V p-p for component video (tri-level sync) TTL: 5.0 V p-p, unterminated for RGBHV, RGBS
Output impedance	60 ohms
Max. rise/fall time	5 ns (TTL sync)
Polarity	Positive or negative (signal dependent)

AUDIO

THD + Noise	0.06% @ 1 kHz at nominal level
Flatness	±0.1 dB
Accuracy	±0.7 dB

AUDIO OUTPUT

Number/signal type	1 mono, balanced 2 mono, unbalanced
Connectors	(1) 3.5 mm mini stereo jack (unbalanced mono left and right, tip-ring-sleeve) 1 female RCA jack (unbalanced, tip-ring) (1) male 3-pin XLR (balanced)

Impedance	50 ohms unbalanced, 100 ohms balanced
Waveforms	Pink noise, white noise, sine wave (fixed/swept), square wave, polarity test
Level ranges	Pink noise: -56 dBu to -8 dBu (-58 dBV to -10 dBV) (1.25 mV to 316 mVrms) Polarity test: -72 dBu to -18 dBu (-74 dBV to -20 dBV) (0.20 mV to 100 mVrms) All other signal types: -72 dBu to +6 dBu (-74 dBV to +4 dBV) (0.20 mV to 1.6 Vrms)
Maximum level (Hi-Z)	>+6 dBu, balanced or unbalanced at 1%THD+N
Maximum level (600 ohm)	>+5.30 dBu, balanced or unbalanced at 1%THD+N
Crest factor (pink noise)	3.06 (9.73 dB)
Crest factor (white noise)	1.73 (4.75 dB)
NOTE: 0 dBu = 0.775 V, 0 dBV = 1 V, 0 dBV ≈ 2 dBu.	

GENERAL

Power	Supplied by internal batteries or an external power supply
External power supply	100 VAC to 240 VAC, 50/60 Hz, external, autoswitchable; to 12 VDC, 1 A, regulated
Power input requirements	12 VDC, 1 A
Batteries (VTG 300)	
Number/type	4 AA batteries (1.5 V alkaline or 1.2 V rechargeable)
Operating time (h:mm)	Alkaline batteries: 1:10 to 2:45, continuous use Rechargeable NiMH batteries: 1:20 to 3:10, continuous use
Batteries (VTG 300R)	
Number/type	1 rechargeable battery pack (4.8 V NiMH, 4000 mAh)
Operating time (h:mm)	5:10 to 5:15 (continuous use)
Recharging time	8 hours
Rack mount	No
Enclosure type	Metal
Enclosure dimensions	6.9" H x 3.4" W x 1.5" D 17.5 cm H x 8.6 cm W x 3.8 cm D (Excluding the rubber boot, connectors, and handles.) 8.3" H x 3.9" W x 2.1" D 21.0 cm H x 9.9 cm W x 5.4 cm D (Including the rubber boot, connectors, and handles.)
Product weight	1.2 lbs (0.5 kg)
Shipping weight	4 lbs (2 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Listings	
Listings (VTG 300 only)	UL, CUL
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF	30,000 hours
Warranty	
Product	3 years parts and labor, excluding the VTG 300R's rechargeable battery pack
VTG 300 R battery pack	90 days
NOTE: All nominal levels are at ±10%	
Model	Part Numbers
VTG 300	60-543-01
VTG 300 R	60-543-02

Specifications are subject to change without notice.



Extron Electronics, USA
1230 South Lewis Street
Anaheim, CA 92805
800.633.9876 714.491.1500
FAX 714.491.1517

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort, The Netherlands
+800.3987.6673 +31.33.453.4040
FAX +31.33.453.4050

Extron Electronics, Asia
135 Joo Seng Rd. #04-01
PM Industrial Bldg., Singapore 368363
+800.7339.8766 +65.6383.4400
FAX +65.6383.4664

Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan
+81.3.3511.7655 FAX +81.3.3511.7656